Quasars in the Framework of Quarkbase Cosmology

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Contents

1 Quasars in the Framework of Quarkbase Cosmology **1**
1.1 Introduction 1
1.2 In Quarkbase Cosmology 2
1.3 Simplified Mathematical Model 2
1.4 Physical Interpretation 2
1.5 Cosmological Implications 3

2 Conclusion **3**

Abstract

Quasars are reinterpreted within Quarkbase Cosmology as large-scale resonators of the etheric plasma field Ψ. Rather than mere products of gravitational accretion, they act as conversion nodes where quark–gluon reconfiguration amplifies luminosity beyond relativistic limits. This framework links microscopic quark dynamics with macroscopic cosmic architecture, providing a unified description of energetic processes in the observable universe.

1 Quasars in the Framework of Quarkbase Cosmology

1.1 Introduction

Let us recall the starting principle of Quarkbase Cosmology: the *quarkbase* is a 100% compact elemental particle, with no internal voids; it displaces the etheric plasma (the vacuum understood as a medium); and its interaction with that ether generates resonances, correlations, and wave patterns that later manifest as physical phenomena.

Quasars (quasi-stellar objects) rank among the most luminous and energetically extreme objects in the universe, visible even at distances of billions of light years. In the standard cosmological framework, they are interpreted as active galactic nuclei where a supermassive black hole accretes matter and converts it into electromagnetic radiation with efficiencies approaching relativistic limits.

However, from the perspective of Quarkbase Cosmology, that explanation is incomplete. Quasars are not merely a byproduct of gravitational accretion; they are cosmic nodes where the fundamental dynamics of quarks and the large-scale structure of the universe converge. Their extreme luminosity would be the macroscopic signature of processes operating at the deepest level of matter.

1.2 In Quarkbase Cosmology

The Quarkbase Theory maintains here that:

- Every high-energy astrophysical object expresses emergent configurations of quark states.
- In this framework, quasars are *cosmic resonators* in which matter falls toward a supermassive black hole and, instead of merely radiating by accretion, undergoes a quark–gluon reconfiguration at mesoscopic scales.

In other words, quasars are macroscopic windows onto the primordial quark–gluon plasma that dominated the early universe.

1.3 Simplified Mathematical Model

The luminosity of a quasar in the standard model is approximated by:

$$L \sim \eta \, \dot{M} c^2$$

where:

- η = efficiency of mass–energy conversion (≈ 0.1 for relativistic accretion disks),
- $\dot{M}$ = accretion rate,
- c = speed of light.

Within the Quarkbase Theory, a quarkbase correction factor Φ_Q is introduced, depending on the local critical density of quark–gluon states:

$$L_Q = \eta \, \dot{M} c^2 \, \Phi_Q$$

with

$$\Phi_Q = 1 + \alpha \left(\frac{\rho_q}{\rho_{\text{crit}}} \right)^{\beta}$$

where:

- ρ_q = local density of quark–gluon excitations in the quasar core,
- ρ_{crit} = critical density for the quark–gluon $\leftrightarrow$ hadronic phase transition,
- α, β = coupling parameters determining how much "extra" luminosity arises from the quarkbase effect.

1.4 Physical Interpretation

When the excitation density ρ_q approaches the critical density ρ_{crit}, the luminosity of the quasar becomes amplified beyond the standard accretion model. This naturally explains why quasars are extraordinarily bright without requiring exotic mechanisms.

Quasars thus operate as *cosmic converters*, capable of transforming gravitational and fundamental energy into observable radiation.

1.5 Cosmological Implications

Quasars resemble natural cosmic laboratories where quark–gluon phase transitions manifest without the need for artificial accelerators. They could serve as a direct test of Quarkbase Cosmology, since their extreme luminosity and spectra are not fully explained by classical models.

From this viewpoint, quasars illuminate not only the visible universe but also the quark–gluonic foundations of the cosmos.

2 Conclusion

Quarkbase Cosmology redefines quasars as critical points of universal energetic reorganization, where the micro (quarks) and the macro (cosmology) come into resonance. They are not merely distant beacons but junctions between fundamental physics and the large-scale architecture of the universe.